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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/375,695	08/17/99	HOYLE	GE-06987A

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MM91/0827

EXAMINER

THOMPSON, J

ART UNIT PAPER NUMBER

2855

DATE MAILED: 08/27/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/375,695

Applicant(s)
Hoyle et al.

Examiner
Jewel V. Thompson

Art Unit
2855



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jun 15, 2001
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☒ The proposed drawing correction filed on Jun 28, 2001 is: a) ☒ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

Art Unit: 2855

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 6/28/01. These drawings are approved.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1- 4, 6, 7 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Alvesteffer et al (6,125,695).

Alvesteffer teaches the aspects of the claimed invention, an integrated fluid flow, temperature and pressure sensor, the sensor (12) comprising:

a body (10) including a path for the flow of fluid:

a temperature determining means (38) located within the body, and coupled to the path.,

for making a determination of the upstream temperature of a fluid flowing in the path:

Art Unit: 2855

heating means (24) located within the body (col. 4, lines 24-34), and coupled to the path, for transferring heat from the heating means to the fluid;

control means (54) located within the body, and coupled to the heating means and to the temperature means, for applying power to the heating means in an amount required to raise the temperature of the heating means above the upstream temperature by the predetermined amount, and for converting the value of the power into a flow signal representing a corresponding flow (col. 7, lines 59- col. 8, lines 32);

pressure sensing means (54) located within the body, for sensing fluid pressure in the path at a location adjacent to one of the heating means and the temperature determining means, for generating an electrical signal representative of the pressure of the fluid;

signal processor means (130) located within the body, and coupled to the control means, to the temperature determine means, and to the pressure sensing means (col. 10, lines 23-30);

signal connector means (136) mounted on the body, and connected to at least the signal processing means, for providing a standard connection between the signal processing means and the signal transmission path (fig. 5);

the pressure sensing means located within the body, generates an analog electrical signal representative of the fluid (col. 9, lines 8-18);

the control means comprises a second temperature determine means (40) coupled to the heating means, for determine the temperature of the heating means;

Art Unit: 2855

the second temperature determining means is an electrical resistor (col. 5, lines 30-33) and the second temperature determining means comprises means coupled to the heating means for measuring the electrical resistance of the heating means (Fig. 4), and the control means comprises means for converting the value of the resistance into a corresponding temperature (col. 7, lines 49-65);

the path is associated with a peripheral wall (22), and wherein the heating means is in the form of a peripheral structure surrounding the peripheral wall, and the thermal contact therewith (fig. 2);

the peripheral wall is made from conventional materials having thickness commensurate with the pressure and temperature of the fluid, except in a region near that in which the heating means is thermally coupled, in which region said peripheral wall is made from a material having higher strength than the conventional materials, of a thickness less than the commensurate thickness (col. 4, lines 9-24).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2855

5. Claims 5, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alvesteffer et al (6,125,695) in view of Redford et al. (5,973,313) and Azima (6,062,077).

Alvesteffer et al teaches the aspects of the claimed invention **except** wherein the control means comprises a memory preprogrammed with a value corresponding to the cross-sectional area of the path, and the flow determination is in the form of one of mass quantity per unit time and volume per unit time; the signal processing means are integrated into a single unit; the pressure sensing means is a ratiometric pressure sensor and a microelectromechanical system device; a controllable valve having a controllable flow channel connected by a further fluid path to the flow path of the integrated sensor, the controllable valve being within the body, and a control processor at a location remote from the body of the integrated sensor. Alvesteffer et al teaches a controller comprising a memory. However, it is not specifically taught that there is a preprogrammed memory with a value corresponding to the cross-sectional area of the path, but the processor does teach the mass flow. The preprogrammed memory is just that, preprogrammed by someone or something. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have preprogrammed the memory to provide the cross-sectional area of the path in order to determine the mass flow rate in any structural body.

As taught by Alvesteffer et al, it appears that the control means and the signal processor are integrated into a single unit as shown in fig. 5. It would have been obvious to one of ordinary skill in the art at the time that the invention was made integrated the processor and the control means as to provide the most efficient and accurate output.

Art Unit: 2855

Redford et al teaches ratiometric control signals. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have placed a ratiometric sensor of Redford et al in the mass flow sensor of Alvesteffer et al in order to provide a measurement of the ratio of pressure proportional to the measurement of heat and temperature.

Azima teaches a mass flow controller comprising a valve (20). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to have placed the valve of Azima in the flow sensor of Alvesteffer et al in order to provide control to the flow flowing in the path.

Response to Arguments

6. Applicant's arguments filed June 19, 2001 have been fully considered but they are not persuasive.

Applicant argues that Alvesteffer et al does not produce "digital signals representing fluid flow, temperature, and pressure, for transmission over a digital signal transmission path"

Examiner disagrees. Alvesteffer et al teaches in col. 10, lines 18-30 an analog-to-digital converter which is connected to the output terminal of the multiplexer. It receives the signals from the processor in order to determine the fluid flow, temperature and pressure.

Art Unit: 2855

Applicant argues that Alvesteffer et al does not teach a connection means mounted on the body, for providing a standard connection between the signal processing means and the signal transmission path

Examiner disagrees. The multiplexer (16), which is the connection between the signal processing and the signal transmission path is shown in fig. 1

Applicant argues that Alvesteffer et al does not state the it is necessary to go to some other reference for the purpose of achieving the most efficient and accurate output.

Examiner disagrees. First of all, it is not necessary for the reference to make such a statement as mentioned by the applicant above. It is necessary to determine that the elements is an obvious choice to one skilled in the art. Programming of the memory is certainly an obvious function when having a processing unit, especially if you want the processor to perform a specific function

Applicant argues that Alvesteffer et al does not teach that the control unit means and the signal processing means are integrated into a single unit.

Examiner disagrees. As seen in fig. 5, and in col. 10, lines 23 and 24, the processor may perform the functions of the power controllers. Also, the processor may control the first and second variable resistors

Art Unit: 2855

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

5,233,868 Coats et al teaches a non-intrusive mass flow measuring apparatus


5,965,813 Wan et al teaches an integrated flow sensor

Art Unit: 2855

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jewel Thompson at (703) 308-6726. The examiner can normally be reached on Mon-Fri. From 8:00am to 4:30pm. The fax phone number for this Group 703-308-7722. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ben Fuller, can be reached on (703) 308-0079.


jvt

August 22, 2001


Benjamin R. Fuller
Supervisory Patent Examiner
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